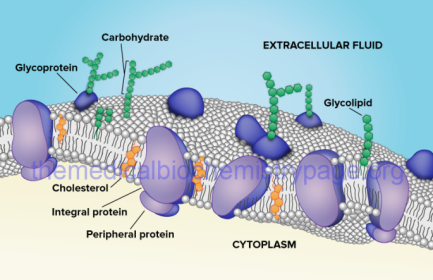
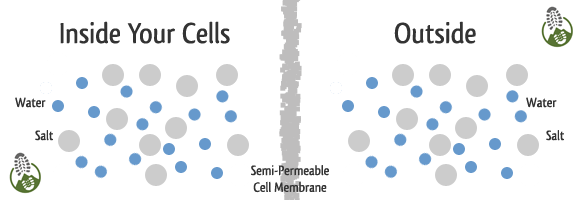
Homework: Real-life application of osmosis (diffusion of H2O)

***Directions: Read, annotate, and answer the questions.***

**How Do Our Bodies Absorb Water?**

Osmosis occurs across a semi-permeable barrier (our cell membranes). That barrier allows water molecules to pass in certain directions, depending on the concentration of substances on each side of the cell membrane.

In normal circumstances, the saltiness of water in your cells is the same as the saltiness outside your cells.

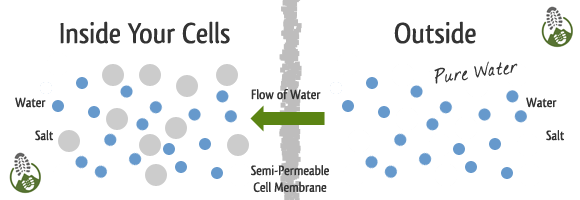


Water enters or leaves the cell in order to retain the saline solution equal both inside and outside the cell. Water passes from low saline concentrations (high water concentration) to high saline concentrations (low water concentrations).

1. Explain why low saline concentrations mean high water concentrations?
2. Define osmosis.

**Why Can’t We Drink Too Much Pure Water?**

When we drink too much pure water, the solution outside our cells drops rapidly in salinity. This means that the water concentration is higher outside the cell than inside the cell. Therefore water passes into our cells to try to reach dynamic equilibrium. If too much water enters a cell, it can swell and even burst which destroys the cell.



Runners and other endurance athletes drink sports drinks that contain sodium and potassium, to help maintain an equal amount of solutes in and outside the cell.

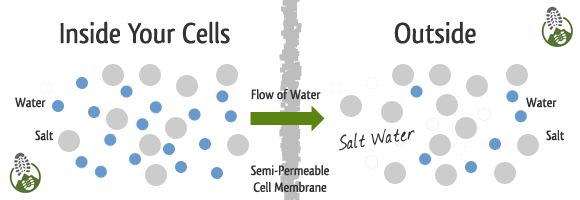
1. What happens to the liquid (solutions) outside the cell when you drink pure water?
2. If one drinks lots of pure water where does water move – into or out of cells? Why?

**Why Can’t We Drink Too Much Salt (Sea) Water?**

The opposite happens when drinking sea (salt) water. The salinity outside your cells increases rapidly, meaning the water concentration is lower outside your cells than inside your cells. Therefore water moves from in your cells to outside your cells, to achieve an equal state. Even though you may be dehydrated, your cells will actually release, rather than absorb, the water around them!

1. If one drinks lots of salt water then the solution outside one’s cells has a high or low water concentration?

But why would your dehydrated body expel water when death is imminent?  Well, this isn’t a conscious decision by your body. It’s simply osmosis at work.



When we drink salt water, water leaves our cells (dehydrating us further) in order to regulate (dilute) the concentration of the salt water we just drank.

So, you should absolutely not drink sea or salt water when dehydrated. It’s not just an issue of not absorbing the water, but an issue of osmosis accelerating the release of water from your cells causing further dehydration.

1. Why should you not drink lots of salt water? What will happen to your cells?